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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/826,676	Applicant(s) TZENG ET AL.	
	Examiner Patricia M. Costanzo	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 June 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The 35 U.S.C. 102 rejection of the Office Action of February 27, 2002 is hereby repeated, taking into consideration the amendment of Claim 1.

2. Claims 1 – 3, 5, 7, and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent No. 6,075,287 (Ingraham *et al.*).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Referring to Claim 1 (Amended): Ingraham et al. disclose an isolated thermal interface (see, for example, Col. 3, line 57 - 65) comprising:

a flexible graphite sheet (12) and (12a) including particles of graphite having two major surfaces, at least one of the major surfaces coated with a protective coating (16) sufficient to inhibit flaking of particles of graphite .

Referring to Claim 2: Ingraham et al. disclose an isolated thermal interface, as recited above, further disclosing wherein the protective coating comprises a thermoplastic material (see, for example, Col. 5, line 31).

Referring to Claim 3: Ingraham et al. disclose an isolated thermal interface, as recited above, and further disclose wherein the thermal plastic comprises polyimide (see, for example, Col. 5, line 31).

Referring to Claim 5: Ingraham et al. disclose an isolated thermal interface, as recited above, further disclosing wherein the protective coating is effective to electrically isolate the coated major surface of the sheet of flexible graphite particles (see, for example, Col. 5, lines 24 - 28).

Referring to Claim 7: Ingraham et al. disclose an isolated thermal interface, as recited above, further disclosing wherein the interface comprises a layer of adhesive interposed between the protective coating and the flexible sheet of graphite (see, for example, Col. 5, lines 30 – 35).

Referring to Claim 8: Ingraham et al. disclose an isolated thermal interface, as recited above, further disclosing wherein the adhesive is selected from the group consisting of acrylic and latex materials (see, for example, Col.5, line 32).

Claim Rejections - 35 USC § 103

3. The 35 U.S.C. 103(a) rejection of the Office Action of February 27, 2002 is hereby repeated, taking into consideration the amendment of Claim 1.

4. Claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,333,557 (Ingraham et al.).

Referring to Claims 4 and 9: Ingraham et al. disclose an isolated thermal interface, as recited above, except for disclosing wherein the protective coating is no more

that about 0.025 millimeters referring to Claim 4, and no more than 0.015 millimeters referring to Claim 9.

It was well known by those of ordinary skill in the art at the time the invention was made that most protective coating materials having sufficient electrical insulating properties also have thermal insulating properties.

Therefore, it would have been obvious, at that time, to modify the apparatus disclosed by Ingraham et al. by providing for a protective coating having a thickness no more that about 0.025 or 0.015 millimeters so as to obtain the advantage of having desired electrical insulation while simultaneously maintaining the maximum amount of thermal conductivity.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,333,557 (Ingraham et al.), in addition, see United States Patent No. 5,834,337 (Unger *et al.*)

Referring to Claim 6: Ingraham et al. disclose an isolated thermal interface, as recited above, except for explicitly disclosing wherein the flexible graphite sheet is coated with a protective coating sufficient to inhibit flaking of particles of graphite

The ability of graphite to "flake", *i.e.*, to exfoliate was well known by those of ordinary skill in the art at the time the invention was made. It is the exfoliation property of graphite that has, and still does, make it so desirable for use in the making of "lead" pencils. In actuality, lead pencils do not use lead to make marks on a surface such as paper rather they use graphite. Due to the weak bonding

between graphite's planar surfaces, only very minor forces need be applied to graphite to cause it to exfoliate, thus making graphite ideal for use as a marking medium in pencils. This ease of exfoliation, however, means that graphite will exfoliate, or flake, easily whenever the graphite is subjected to even a very small shearing force. In fact, it is for this reason that graphite has been, and still is, used as a lubricant.

Therefore, it would have been obvious to those of ordinary skill in the art at the time of the invention, to modify the apparatus disclosed by Ingraham et al. by providing for a coating over the graphite to obtain the advantage of protecting the immediate environment from contamination by exfoliated flakes of graphite. See, Unger *et al.*, Col. 4, lines 13 – 19, for support of the above.

NEW 35 U.S.C. 103 REJECTIONS

6. Claims 1 - 20 are rejected under 35 U.S.C. 103(a) as being obvious over U. S. Patent No. 4,867,225 (Grapes *et al.*) in view of U. S. Patent No. 6,075,287 (Ingraham *et al.*).

Referring to Claim 1 (Amended): Grapes *et al.* disclose an isolated thermal interface (Figure 1 (16)) comprising:

a flexible graphite sheet including particles of graphite (Col. 5, lines 48 – 55) having two major surfaces.

Grapes *et al.* do not specifically disclose at least one of the major surfaces coated with a protective coating (Col. 6, lines 52 – 55) sufficient to inhibit flaking of particles of graphite .

Grapes *et al.* do disclose, however, isolate the fibers as they are "disposed within a matrix", wherein such matrix is an epoxy resin (Col. 5, lines 42 – 45; note that Applicant suggests such advantageous use of resin for the flexible sheet on page 13, lines 4- 6 of the present Application), and additionally, Grapes *et al.* teach that it is desirable to isolate the graphite by coating with a thin layer of metal (Col. 6,lines 52 – 57).

Ingraham *et al.* specifically teach coating graphic particles with an adhesive or with materials that include polyimide and plastics (Col. 5, line 25 – 35).

Additionally, it was well known in the art at the time of the invention that any contaminate material within the electronic device was to be avoided for many reasons including shorting the circuits and/or interrupting the designed electron flow. Graphite fibers are small particles on the order of microns in length and less in other dimensions. Graphite fibers are a potential source of contamination in an electron device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device as disclosed by Grapes *et al.* by providing for a protective such as is taught by Ingraham *et al.* to obtain the advantages discussed above.

Referring to Claim 2: The proposed device of Grapes *et al.* and Ingraham *et al.* disclose an isolated thermal interface, as recited above, further disclosing wherein the

protective coating comprises a thermoplastic material (Grapes, near middle of Abstract).

Referring to Claim 3: The proposed device of Grapes *et al.* and Ingraham *et al.* disclose an isolated thermal interface, as recited above, and further disclose wherein the thermal plastic comprises polyimide (Ingraham *et al.*, Col. 5, line 31).

Referring to Claim 5: The proposed device of Grapes *et al.* and Ingraham *et al.* disclose an isolated thermal interface, as recited above, further disclosing wherein the protective coating is effective to electrically isolate the coated major surface of the sheet of flexible graphite particles (Ingraham *et al.*, Col. 5, lines 24 - 28).

Referring to Claim 7: The proposed device of Grapes *et al.* and Ingraham *et al.* disclose an isolated thermal interface, as recited above, further disclosing wherein the interface comprises a layer of adhesive interposed between the protective coating and the flexible sheet of graphite (Ingraham *et al.*, Col. 5, line 34).

Referring to Claim 8: The proposed device of Grapes *et al.* and Ingraham *et al.* disclose an isolated thermal interface, as recited above, further disclosing wherein the adhesive is selected from the group consisting of acrylic and latex materials (see, for example, Col.5, line 32; note: acrylic and latex adhesives were, and still are, very well known and used).

Referring to Claim 10 (Amended): Grapes *et al.* disclose a process for producing a thermal interface, the process comprising:

(a) forming a flexible graphite sheet (Col. 5, lines 56 - 61) into the size and shape desired for a thermal interface, wherein the formed flexible graphite sheet has at least one major surface and at least one edge surface, and wherein the sheet has its direction of greater thermal conductivity parallel to the major surface (Col. 5, lines 50 – 52); and

(b) coating the formed flexible graphite sheet with a material to form a protective coating, such that the material forms a protective boundary about the flexible graphite sheet (a binder of epoxy or thermoplastic resin forms a protective boundary as is stated by Applicant in lines7 – 8, page 8, of Amendment; see also below).

Grapes *et al.* do not specifically disclose applying a protective coating to the formed flexible graphite sheet wherein such coating being sufficient to inhibit flaking of particles of graphite.

Grapes *et al.*, however, do disclose applying a binder of epoxy or thermoplastic resin is to the flexible graphite to make the formed sheet (Figure 1 (16)) wherein the binder material provides a protective coating sufficient to inhibit flaking of particles of graphite (see Abstract wherein), in addition to acting as a binder.

Additionally, Ingraham *et al.* do specifically disclose the formed flexible graphite sheet (Col. 5, lines 27 - 28) having a protective coating sufficient to inhibit flaking of particles of graphite

It would have been obvious, therefore, to one of ordinary skill in the art at the time the invention was made to modify the process as taught by Grapes *et al.* by providing for a protective coating as taught by Ingraham *et al.* to obtain the advantages of having a coating sufficient to inhibit flaking of small sized particles (it was common knowledge at the time of the invention that a material, especially a layer of material that comprises small particles or fibers inherently presents the danger of contamination from having the fine-sized particles flake off of the material) and to insulate against unwanted electrical communications (Ingraham *et al.*, lines 24 – 27).

Referring to Claim 12: The proposed process of Grapes *et al.* and Ingraham *et al.* discloses a process, as recited above, except for explicitly disclosing wherein the material is coated on the formed flexible graphite sheet by spray coating, roller coating, or hot laminating press.

Coating by spray coating, roller coating, or the hot laminating press method was well known by those of ordinary skill in the art at the time the invention was made.

Therefore, it would have been obvious to those of ordinary skill in the art at the time of the invention, to modify the process disclosed by Grapes et al. by providing for a coating over the graphite by using the method of spray coating, roller coating, or hot laminating press to obtain the advantage of protecting the immediate environment from contamination by exfoliated flakes of graphite.

Referring to Claim 14: The proposed process of Grapes *et al.* and Ingraham *et al.* discloses a process, as recited above, except for explicitly disclosing wherein the material is coated on the formed flexible graphite sheet by roller coating, laminating with adhesive, or hot press laminating, and then cutting the formed flexible graphite sheet into the desired size and shape of the thermal interface.

As discussed above, coating by spray coating, roller coating, or the hot laminating press method was well known by those of ordinary skill in the art at the time the invention was made. And, although Grapes *et al.* do not specifically disclose cutting the formed flexible graphite sheet into the desired size and shape of the thermal interface subsequent to the coating process, they do teach that the dimensions of the thermal plane are related to the given chassis (Col. 6, lines21 – 24).

Thus, It would have been obvious to coat the graphite either prior to, or subsequent to, cutting the formed sheet into the desired size and shape as this would involve only a mere change in the order of the steps of the process, which involves only routine skill in the art.

Referring to Claim 15: The proposed process of Grapes *et al.* and Ingraham *et al.* discloses a process, as recited above, further disclosing wherein the material comprises a thermoplastic material (see, Grapes *et al.*, near middle of Abstract).

Referring to Claim 16: The proposed process of Grapes *et al.* and Ingraham *et al.* discloses a process, as recited above, further disclosing wherein the material comprises polyimide (see, for example, Ingraham *et al.*, Col. 5, line 30).

Referring to Claim 17 and 20: The proposed process of Grapes *et al.* and Ingraham *et al.* discloses a process, as recited above, except for disclosing wherein the material is no more than 0.025 millimeters or 0.015 millimeters in thickness (see, for example, Col. 2, line 17 in conjunction with Col. 3, lines 10 - 14).

It was well known by those of ordinary skill in the art at the time the invention was made that most protective coating materials having sufficient electrical insulating properties also have thermal insulating properties.

Therefore, it would have been obvious, at that time, to modify the apparatus disclosed by Grapes et al. by providing for a protective coating having a thickness no more that about 0.025 or 0.015 millimeters so as to obtain the advantage of having desired electrical insulation while simultaneously maintaining the maximum amount of thermal conductivity.

Referring to Claim 18: The proposed process of Grapes *et al.* and Ingraham *et al.* discloses a process, as recited above, further disclosing wherein an adhesive is coated on the formed flexible graphite sheet between the material and the formed flexible graphite sheet (Ingraham *et al.*, Col. 5, lines 30 – 35).

Referring to Claim 19: The proposed process of Grapes *et al.* and Ingraham *et al.* discloses a process, as recited above, except for explicitly disclosing wherein the adhesive comprises an acrylic or a latex material.

Ingraham et al. however disclose wherein the adhesive comprises an insulative epoxy or other materials known and suitable for that purpose (Col.4, lines 50 - 55). Acrylic or latex adhesives were commonplace adhesives in the industry at the time of the invention.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process as disclosed by Ingraham r *et al.* by providing for an adhesive of acrylic or a latex as suggested by Ingraham *et al.* as these adhesives were known and suitable for that purpose.

7. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) being obvious over U. S. Patent No. 4,867,225 (Grapes *et al.*) in view of U. S. Patent No. 6,075,287 (Ingraham *et al.*) further in view of United States Patent No. 5,650,592 (Cheskis *et al.*).

Referring to Claim 11: The proposed process of Grapes *et al.* and Ingraham *et al.* discloses a process, as recited above, except for explicitly disclosing wherein the protective material is coated on the formed flexible graphite sheet so as to flow completely about at least one of the major surfaces and at least one of the edge surfaces of the sheet, and extend beyond at least one of the edge surfaces of the sheet.

Cheskis *et al.* discloses a process of protecting a graphite composite from damage that would lead to flaking of the graphite wherein protective material is coated on the formed graphite sheet so as to flow completely about at least one of the major surfaces and at least one of the edge surfaces of the sheet, and extend beyond at least one of the edge surfaces of the sheet (see, for example, Cheskis *et al.* Figure (22)).

Therefore, it would have been obvious to those of ordinary skill in the art at the time of the invention, to modify the process disclosed by Grapes et al. and Ingraham *et al.* by providing for a protective coating over the graphite as disclosed by Cheskis *et al.* to obtain the advantage of protecting the immediate environment from contamination by flaking of the graphite particles.

Referring to Claim 13 The proposed process of Grapes *et al.* and Ingraham *et al.* discloses a process, as recited above, except for explicitly disclosing wherein the material is coated on the formed flexible graphite sheet on at least one of its major surfaces.

Ingraham *et al.*, however, do disclose wherein "an insulative coating or paste, preferably of an adhesive such as that used for adhesive attachment **16** is applied to the conduct lamina" (Col. 5, lines 26 – 27).

Additionally, Cheskis *et al.* disclose wherein protective material is coated on a graphite sheet on at least one of the major surfaces (see, for example, Col. 3, lines 65).

Therefore, it would have been obvious to those of ordinary skill in the art at the time of the invention, to modify the process disclosed by Grapes *et al.* and Ingraham *et al.* by providing for a coating over the graphite as disclosed by Cheskis *et al.* to obtain the advantage of protecting the immediate environment from contamination by exfoliated flakes of graphite.

Response to Arguments

8. Applicant's arguments filed June 17, 2002 have been fully considered but they are not persuasive. The rejection stands, modified only to accommodate the amendments made to the Claims by Applicant. New rejections are made in response to Applicant's amended claims.

In addition, Examiner presents the remarks below in response to Applicants arguments.

MPEP 2111 teaches that during patent examination, the pending claims must be given the broadest reasonable interpretation consistent with the specification, and case law says that "reading a claim in light of the specification, to thereby interpret limitation explicitly recited in the claim, is a quite different thing from 'reading limitations of the specification into a claim,' to thereby narrow the scope of the claim by implicitly adding disclosed limitation which have no express basis in the claim.

On page 3 of the Amendment, Applicant states that "Claim 1 is directed to an 'isolated thermal interface.' Applicant then goes on to explain that "Such a thermal interface may be used in place of conventional thermal greases or adhesives which are commonly used to connect the electrical device to the heat sink" (emphasis added

because may infers may not), and, additionally, we note that Applicant also teaches the use of the recited thermal interface with the addition of a coating and of an adhesive.

The graphite heat absorbers taught by Ingraham *et al.* are, by dictionary definition, interfaces. The graphite heat absorbers of Ingraham *et al.* interface between the various chips used in the device. They may, or may not, be used in place of conventional thermal greases (Col. 4, lines 63 –66) and are used in conjunction with a coating (Col. 5, line 26 –27) and an adhesive (Col. 4, line 48 – 53)..

In sum, Claim 1, as recited, reads on the graphitic, thermal interface as taught by Ingraham *et al.*

On page 4 of the Amendment, in the third paragraph, Applicant argues that the reason for coating the graphite in the present Application is different from the reason for coating the graphite Ingraham *et al.*

MPEP 2144, states in part, that the "reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by Applicant . . . it is clear that while there must be motivation to make the claimed invention, there is no requirement that the prior art provide the same reason as the applicant to make the claimed invention."

Additionally, it must be noted that while the thermal interfaces of Ingraham *et al.* are not in direct contact with the chips, they are nearly in contact to the chips as they are separated from the chips only by a thin layer of adhesive (note that such advantageous use of adhesive is taught by Applicant on page 15, line 17, of the present

Application), and any contamination, as stated above, within the device is to be avoided to the greatest extent possible.

On page 4 of the Amendment, Applicant states: "There is no suggestion in Ingraham *et al.* of the use of a thermoplastic material in place of or surrounding the adhesive . . ." Ingraham *et al.* suggest, In Col. 5, line 31, the use of polyimide, which is a thermoplastic as is stated in the present Application on page 13, lines 23 – 24.

Referring to Applicant's argument presented on page 5, first paragraph, it is clear from Ingraham *et al.*, in Col. 5, line 34, that the described protective coating (lines 24 and 25), which may be materials such as polyimide or plastic (lines 30 – 32), is adhesively attached (line 34). That is, adhesive is interposed between the protective coating and the graphite thermal sheet, as recited in Claim 7.

Referring to Applicant's argument related to Claim 8 wherein the adhesive be selected from the group consisting of acrylic and latex materials. As discussed above, acrylic and latex were, and are, very well known and used adhesives. There is nothing novel in the use of acrylic and latex adhesives. Applicant has provided no evidence that the use of either acrylic or latex is required, nor is any evidence provided that there is a benefit from the use of either acrylic or latex adhesive. In fact, Applicant suggests a variety of adhesives (including acrylic and latex) that would work, if their use was " desired" (page 15, second paragraph).

On page 7 of the Amendment, Applicant argues: "Examiner has not provided any prior art basis for [the] rejection but instead has merely speculated that it would have been obvious to modify the coating to make it thinner." Examiner stands by the

reasoning used in the prior Office Action. Applicant has provided no factual evidence that the providing for a thin layer of plastic (less that 0.025 mm) was outside of the scope of one of ordinary skill in the art at the time the invention was made. Applicant has simply argued the point, and as well accepted, Applicants arguments cannot take the place of evidence in the record (MPEP 2145 (I)).

Additionally, it was well known, and common sense, in the art, that if an additional interface, such as an adhesive, is placed between the source of the heat and the conductor of the heat, then either that interface must also be a conductor, or if not a conductor or if a poor conductor, that interface must be as thin as possible in order to obtain the benefit of a functional thermal conductive device. In other words, the layer must be as thin as required to assure that the device still conducts heat. So, therefore, Examiner maintains that the as the thickness of a given adhesive layer can be calculated easily (as each adhesive has a known thermal conductivity), the calculated thickness would of necessity be the determining factor in the thickness of the adhesive used in the device -- else the device would not work.

Applicant argues, "Examiner is confusing the terms 'exfoliated graphite' (which applicants used to refer to chemically modified, thermally expanded, recompressed natural graphite-based flexible sheet) with the laminar characteristic of all graphite material in general."

Examiner does not see where Applicant specifically defines the term "exfoliation". On page 12, Applicant states: "The expanded, *i.e.*, exfoliated, graphite particles . . . " Examiner understands this statement to mean the Applicant is saying that "exfoliated" is

equivalent to "expanded". "Exfoliate" means to peel off or out, while "expand" means to increase. For example, a sponge expands when wet, while old peeling paint is said to be exfoliating off of the wall. In a more scientific use, the spacing between individual layers of graphite expand when a molecular substance is intercalated between the layers, but when the interlayer spacing has expanded to such an extent that the forces holding the layers together are overcome, then the layers exfoliate one from the other and the layers become separate entities.

Responding to Applicant's argument on page 9 of the Amendment. Unger *et al.* Col. 4, line 7 – 19 discloses a method of making wherein the heat transfer element is formed and then it is sliced, or alternatively can be coated and then sliced.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to Patricia Costanzo at 703 305 5675 on Monday – Friday from 8:00 A.M. – 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful Supervisory Primary Examiner Tom Thomas can be reached at 703 308 2772.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist at 703 308 0956.

Papers may be faxed directly to Examiner at 703 745 2002.

Using facsimile machines to transmit correspondence is encouraged. The official Technical Center 2800 before-final FAX number is 703 872 9318 and the after-final FAX number is 703 872 9319. These FAX numbers will provide the FAX sender with an auto-reply verifying receipt of their FAX by the United States Patent and Trademark Office.

If there should be a problem while faxing to the Office, please contact Technical Center 2800 Customer Service at 703 306 3329.

Tom Thomas

TOM THOMAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

pmc
July 25, 2002